Chandrika Kamath

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Research Interests

• Practical applications of data analysis	• Data mining
• Signal, image, and video processing	• Pattern recognition and machine learning
• Statistical analysis	• High-performance scalable computing

Education

Ph.D.	Computer Science, University of Illinois at Urbana-Champaign, 1986
M.S.	Computer Science, University of Illinois at Urbana-Champaign, 1984
B. Tech.	Electrical Engineering, Indian Institute of Technology, Bombay, India, 1981

Professional Experience

5/97 – present	Computer Scientist, PI for several LDRD and DOE projects, CASC, LLNL
10/98 – 9/07	Project Leader, Sapphire scientific data mining project
1/96–4/97	Consulting Software Engineer, Digital Equipment Corporation
12/86–12/95	Principal Software Engineer, Digital Equipment Corporation
8/81–8/84	Research Assistant, Center for Supercomputing Research and Development, UIUC

Selected Honors and Organizations

- Chair, SIAM Activity Group on Data Mining and Analytics, August 2011- December 2013.
- Steering Committee Chair, SIAM International Conference on Data Mining, 2007-present
- Founding Editor; Editor-in-Chief (2006-2009), Wiley journal on Statistical Analysis and Data Mining
- 2006 R&D 100 award for the Sapphire Scientific Data Mining Software
- US Patents 6675162 (Jan 6, 2004), 6,859,804 (Feb 22, 2005), 6,879,729 (April 12, 2005), 6,938,049 (Aug. 30, 2005), 7,007,035 (February 28, 2006), and 7,062,504 (June 13, 2006). One patent pending.
- Conference co-chair, SIAM International Conference on Data Mining, 2004-2005.
- Program co-chair, Third SIAM International Conference on Data Mining, San Francisco, May 2003.
- Member, NRC Panel, NASA's Computing, Information, and Communications Technology, 2002-03
- Lead organizer, IPAM program on Mathematical Challenges in Mining Scientific Data, UCLA, 2002
- Organizer, First through Ninth Workshops on Mining Scientific Datasets, 1999 – 2006.
- Member, various program committees for Data Mining Conferences, 2000-present.
- IBM Graduate Fellowship, 1984–86
- Senior member, IEEE; Member, ACM and SIAM

Books

C. Kamath, *Scientific Data Mining: A Practical Perspective*, SIAM, Philadelphia, PA, May 2009. ISBN 978-0-89871675-7.

R. Grossman, C. Kamath, P. Kegelmeyer, V. Kumar, and R. Namburu (eds.), *Data Mining for Scientific and Engineering Applications*, Kluwer, September 2001. ISBN 1-4020-0033-2.

Selected Publications

C. Kamath and Y. J. Fan, “Finding motifs in wind generation time series data,” International Conference on Machine Learning and Applications, Boca Raton, FL, Dec 12-15. 2012.

C. Kamath and Y. J. Fan, "Using Data Mining to Enable Integration of Wind Resources on the Power Grid," Statistical Analysis and Data Mining, Volume 5, Issue 5, October 2012, pp 410-427.

C. Kamath, “On the role of data mining techniques in uncertainty quantification,” International Journal for Uncertainty Quantification, Vol 2, Issue 1, pp 73-94, 2012.

C. Kamath, "Dimension reduction for streaming data," book chapter, Data Intensive Computing: Architectures, Algorithms, and Applications, Ian Gorton and Deb Gracio, editors. Cambridge University Press, 2012, pp 124-156.

C. Kamath and O. Hurricane, "Robust extraction of statistics from images of material fragmentation," International Journal of Image and Graphics, Volume 11, Issue 3, pp 377-401, July 2011.

C. Kamath, "Associating Weather Conditions with Ramp Events in Wind Power Generation," 2011 IEEE PES Power Systems Conference & Exposition, Phoenix, Arizona, March 20 - 23, 2011

C. Kamath, “Understanding wind ramp events through analysis of historical data,” IEEE PES Transmission and Distribution conference, New Orleans, April 2010.

C. Kamath, A. Gezahegne, and P. L Miller, "Identification of coherent structures in three-dimensional simulations of a fluid-mix problem," International Journal of Image and Graphics, Volume 9, issue 3, pp. 389-410, July 2009.

C. Kamath and P. L. Miller, "Image Analysis for Validation of Simulations of a Fluid Mix Problem," IEEE International Conference on Image Processing, Volume III, pages 525-528, San Antonio, September 2007.

E. Cantú-Paz and C. Kamath, “An empirical comparison of combinations of evolutionary algorithms and neural networks for classification problems,” IEEE Trans on Systems, Man, and Cybernetics-Part B, Volume 35, No. 5, October 2005, pp. 915-927.

S.-C. Cheung and C. Kamath, “Robust background subtraction with foreground validation for urban traffic video,” Eurasip Journal on Applied Signal Processing, Volume 14, August 2005, pp. 2330-2340.

C. Kamath, E. Cantú-Paz, S. Cheung, I. K. Fodor, N. Tang, “Experiences in mining data from computer simulations,” chapter in New Generation of Data Mining Applications, M. Kantardzic and J. Zurada (eds.), pp. 211-232, IEEE Press, 2005.

E. Cantu-Paz, S. Newsam and C. Kamath, “Feature Selection in Scientific Applications,” Proceedings, ACM International Conference on Knowledge Discovery and Data Mining, Seattle, 2004, pp.788-793.

E. Cantú-Paz and C. Kamath, “Evolving neural networks to identify bent-double galaxies in the FIRST survey”, Neural Networks, Volume 16, Number 3-4, April-May 2003, pp 507-517.

E. Cantú-Paz and C. Kamath, “Inducing oblique decision trees with evolutionary algorithms”, IEEE Transactions on Evolutionary Computing, Volume 7, No.1, February 2003, pp. 54-68.

Kamath, C., E. Cantú-Paz, and D. Littau, “Approximate splitting for ensembles of trees using histograms”, Proceedings of the Second SIAM Conference on Data Mining, April 2002, pp. 370-383.

I. K.Fodor and C. Kamath, “Dimension reduction techniques and the Classification of Bent Double Galaxies,” Computational Statistics and Data Analysis journal, Volume 41, pp 91-122, 2002.

Fodor, I. K. and C. Kamath, “Denoising through Wavelet Shrinkage: An Empirical Study”, SPIE Journal on Electronic Imaging, Volume 12, No. 1, pp 151-160, January 2003.